

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * *

Investigation of:

*

*

SINKING OF THE *SS EL FARO*

* Accident No.: DCA16MM001

ON OCTOBER 1, 2015

*

*

* * * * *

Interview of: TIO DEVANEY

National Transportation Safety Board
 490 L'Enfant Plaza East, S.W.
 Washington, D.C.

Thursday,
 October 13, 2016

APPEARANCES:

R. JON FURUKAWA, Investigator-in-Charge
Group Chairman, Survival Factors
National Transportation Safety Board

LIAM LaRUE, Marine Accident Investigator
National Transportation Safety Board

MICHAEL KUCHARSKI, Marine Accident Investigator
Group Chairman, Nautical
National Transportation Safety Board

DREW EHLERS, Marine Accident Investigator
National Transportation Safety Board

<u>ITEM</u>	<u>I N D E X</u>	<u>PAGE</u>
Interview of Tio Devaney:		
	By Mr. Furukawa	6
	By Mr. Kucharski	41
	By Mr. Furukawa	42
	By Mr. Kucharski	52
	By Mr. Furukawa	53

Furukawa Robert

From: Tio Devaney - Harding <[REDACTED]>
Sent: Friday, December 02, 2016 12:22 PM
To: Furukawa Robert
Subject: RE: Transcript and Tech Review?

Hi Jon,

I had a quick look over the transcript and didn't see any issues. I apologize for the delayed reply. I'm in the Bahamas with limited email access

Best regards,

Tio

Sent from my T-Mobile 4G LTE Device

----- Original message -----

From: Furukawa Robert <[REDACTED]>
Date: 12/1/16 10:17 PM (GMT-05:00)
To: Tio Devaney - Harding <[REDACTED]>
Subject: Transcript and Tech Review?

Tio,

Do you have any corrections for the transcript of your interview or the technical review of the draft Survival Factors Report?

I'll need you to submit something or reply to this email that you have no corrections.

Cheers,
Jon

Get [Outlook for iOS](#)

CONFIDENTIALITY NOTICE - THIS E-MAIL TRANSMISSION MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL, PROPRIETARY, SUBJECT TO COPYRIGHT, AND/OR EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. IT IS FOR THE USE OF INTENDED RECIPIENTS ONLY. If you are not an intended recipient of this message, please notify the original sender immediately by forwarding what you received and then delete all copies of the correspondence and attachments from your computer system. Any use, distribution, or disclosure of this message by unintended recipients is not authorized and may be unlawful.

I N T E R V I E W

(11:11 a.m.)

MR. FURUKAWA: Okay. It is Thursday, October 13th. It is 11:11. We're at the National Transportation Safety Board, and we are here to interview Mr. Tio Devaney, the operations director for Harding Safety USA. And Tio -- just call you Tio?

MR. DEVANEY: That's fine.

MR. FURUKAWA: Okay. The purpose of the investigation is to increase safety, not to assign fault, blame or liability. The NTSB cannot offer any guarantee of confidentiality or immunity from legal or license action.

MR. DEVANEY: I understand.

MR. FURUKAWA: A transcript or a summary of the interview will go into the public docket, and the interviewee can have one representative of the interviewee's choice. The representative may not testify for the interviewee, and the representative's comments should be limited, and objections that are not the grounds for the NTSB to refrain from asking questions.

Do you want a representative with you?

MR. DEVANEY: No. I'm fine.

MR. FURUKAWA: Okay. And you know that this is being recorded?

MR. DEVANEY: Understood.

MR. FURUKAWA: Okay. So, my name is Jon Furukawa. I'm the group chairman for survival factors, for the *El Faro* sinking. You

1 have my business card. Do you have any business cards?

2 MR. DEVANEY: Unfortunately, at this time Harding has been
3 acquired by Palfinger. So we've not been allowed to issue cards.

4 MR. FURUKAWA: Okay. Let's see. Why don't we go around and
5 -- for the transcriber, so she can hear our voices and all that --
6 introduce yourself and your organization.

7 MR. DEVANEY: Okay. My name is Tio Devaney. I'm
8 representing Harding Safety.

9 MR. FURUKAWA: Okay.

10 MR. LaRUE: Liam LaRue, NTSB.

11 MR. KUCHARSKI: Mike Kucharski, group chairman, nautical.

12 MR. EHLERS: Drew Ehlers, NTSB.

13 MR. FURUKAWA: Okay. And, I have you listed down as
14 operations director, North America, for Harding Safety USA. But
15 you said you've been acquired by --

16 MR. DEVANEY: Harding Safety has recently been acquired by
17 Palfinger. So over the next 12 months the transition will occur
18 and the Harding name will go away and it will be called Palfinger.

19 MR. FURUKAWA: Okay.

20 MR. DEVANEY: So until the branding and transfer has been
21 completed, I won't be issuing any material with Harding on it.

22 MR. FURUKAWA: Okay. And Palfinger is P A L F I N G E R?

23 MR. DEVANEY: Correct.

24 MR. FURUKAWA: Okay. Let's see, so you know that the NTSB is
25 an independent federal agency charged with determining the

1 probable cause or causes of transportation accidents and promoting
2 transportation safety. We're not part of the DOD or Coast Guard.
3 We have no regulatory enforcement powers. Actually, I should have
4 done this off tape. You know the party system.

5 INTERVIEW OF TIO DEVANEY

6 BY MR. FURUKAWA:

7 Q. Let's see. So, Tio, why don't we just go into -- can you
8 give me your professional background information?

9 A. Okay. Just as professional background, I am a -- formally
10 trained as a naval architect and marine engineer. I'm a
11 registered chartered engineer in Europe. I hold a Master's in
12 Maritime Operations and Management.

13 In terms of former work experience, I've sailed with numerous
14 armed forces, naval services. I've worked for the Bahamas
15 maritime administration as the technical officer. Following that,
16 I worked for Lloyd's Register, starting as a surveyor and leaving
17 as a principal surveyor. During my time at Lloyd's Register, I
18 was tasked with being the global head for lifesaving appliances,
19 under which lifeboats fell.

20 I later transferred from Lloyd's Register to Lloyd's Register
21 North America, where I was then the development manager for the
22 passenger ship group. After leaving Lloyd's, I then became
23 country manager for a survival systems company, called Survival
24 Craft Inspectorate, which is a manufacturer of lifeboats and LSA
25 equipment. Later, I transferred -- or, on leaving Survival Craft

1 Inspectorate I joined Harding Safety, initially as the Harding
2 Safety Americas regional sales director and then later
3 transferring into the role as operations director, which I
4 currently hold.

5 Q. Okay. And how long have you been at Harding Safety?

6 A. I've been at Harding Safety for 18 months now.

7 Q. Okay. And for naval architect and marine engineering, that's
8 your degree from the U.S. Coast Guard Academy?

9 A. That is correct.

10 Q. And what year did you graduate?

11 A. In 2001.

12 Q. And you said you have a Master's in Marine Operations?

13 A. In Maritime Operations and Management from City University
14 London.

15 Q. What year was that?

16 A. That was in 2005.

17 Q. Okay. And you served in the Bahamian coast guard?

18 A. That is correct.

19 Q. For how many years?

20 A. From '95 to 2002.

21 Q. Okay. So basically you've been in the maritime industry
22 since 1995?

23 A. That is correct.

24 Q. Okay. I'll add that up later on, for how many years. And
25 how old are you, sir?

1 A. I am 41.

2 Q. Forty-one. Okay. And --

3 A. If it is worth noting, I also represent a number of maritime
4 administrations as a maritime inspector and surveyor. That being
5 Bahamas maritime, Malta, Isle of Man, Cayman Islands, Dominica,
6 Bermuda -- just to name a few. And I've been involved in various
7 casualty investigations as it relates to lifeboats and lifeboat
8 safety.

9 Q. Okay. And let's see, you also said that you were the global
10 head for lifesaving appliances at Lloyd's Register?

11 A. That is correct.

12 Q. Okay. Okay.

13 A. That was during the period of 2005 to 2008.

14 Q. Okay. Okay. And what I have here on the screen is a part of
15 my report -- this is just a draft of my facts report, and you'll
16 get a copy of this also for technical review. It shows a swamped
17 starboard lifeboat of the *El Faro* when it was discovered floating
18 bow up, and it's being examined by a Coast Guard rescue swimmer.
19 You know, so it was in pretty bad shape. And like I said before,
20 you know, they're open lifeboats. The vessel was built in 1975,
21 so it was under the 1973 rules, where open lifeboats were allowed.
22 The starboard lifeboat was manually propelled. This is the one
23 that we recovered. You know, it had the Fleming gear. The port
24 lifeboat was motor propelled, you know, it was also the rescue
25 boat too.

1 So this is in Miami, when they're bringing in the lifeboat.
2 And these are some photos from, you know, the -- there's big parts
3 of the hull missing. The propeller is fouled. One of the blades
4 was bent, and, you know, they said they -- you know, they
5 transported it just as it was. You know, the name is kind of
6 scratched out. Found one of the medical bags here. That's the --
7 like the starboard quarter, the starboard midship, just a big
8 section ripped out. And, yeah, you know, the -- for the medical
9 bag, it was still sealed, so -- and earlier, I wanted to bring you
10 in here to see if there was any way that the lifeboat could have
11 been launched.

12 We've since heard some stuff on the VER, but, you know,
13 you're the lifeboat expert. So I wanted to show you the
14 lifeboats, both the starboard one that we recovered, the port one
15 that's on the bottom of the ocean -- we have some photos of that
16 -- and the davits that we have photos also.

17 Some more of the -- that's the port bow. You know, just big
18 sections ripped off. Originally, they told us that there was a
19 sea anchor. But what we -- when we got there, it was a Coleman
20 camper ground cover that we had found, you know, brand-new. So it
21 was probably part of the cargo, so -- and there is the --

22 A. MASACO.

23 Q. MASACO. That's Marine Safety Equipment Company of New
24 Jersey. And I guess you're here because Harding acquired --

25 A. Harding -- it was one of the companies acquired by Harding

1 Safety along the way.

2 Q. Back in, like -- I think it was 1992 or --

3 A. Harding has acquired so many companies along the way, it's
4 hard to keep track.

5 Q. Okay.

6 A. It is, indeed, one of the companies acquired by Harding
7 Safety.

8 Q. Okay. And -- yeah. So just these are the photos -- you
9 know, that's the reason why it was, you know, floating bow up.
10 It's just --

11 A. If we look at this photo, for example -- just give me some
12 perspective. Like, we have -- this is the starboard boat --

13 Q. Starboard side --

14 A. -- or port boat?

15 Q. Starboard side. Of the starboard boat, the one with Fleming
16 gear.

17 A. Okay. This is the starboard side of the starboard boat.

18 Q. Yes.

19 A. Okay.

20 UNIDENTIFIED SPEAKER: And this is image 0621, just so you --
21 if you need to go back to it.

22 BY MR. FURUKAWA:

23 Q. Yeah.

24 A. Okay.

25 Q. And I took these photos and -- so on the other side of this

1 would be the, you know, the inside. So it was just the outer
2 shell was ripped out, along with the buoyant material. That was
3 like -- that's probably like the largest destructed part --

4 UNIDENTIFIED SPEAKER: This is the starboard boat?

5 MR. FURUKAWA: That's the starboard boat. You see the
6 Fleming gear. Those are the Fleming gear handles up there. It's
7 the -- the port boat is the diesel operated one.

8 MR. DEVANEY: Yeah. The reason why this photo is so
9 interesting to me, particularly if you're looking at the wave
10 action and the rolling of the ship itself, one would expect that
11 type of damage to have been on the side that's inboard to the
12 ship.

13 UNIDENTIFIED SPEAKER: The engaged side. Yeah. And it's got
14 the pad on the back there.

15 MR. DEVANEY: Correct.

16 UNIDENTIFIED SPEAKER: That's what I was looking at.

17 MR. DEVANEY: So when you see this type of damage sustained,
18 this is the type of damage that would -- you would typically see
19 when a lifeboat has actually fallen into the water.

20 UNIDENTIFIED SPEAKER: Uh-huh.

21 MR. DEVANEY: Then you would have the damage to the hull
22 itself, from the impact smashing into the water.

23 BY MR. FURUKAWA:

24 Q. And does it look like the impact of --

25 A. Yes. If you look at a lifeboat, and there's tons of evidence

1 out there that would suggest when a lifeboat falls from the loose
2 gear into the water, and if it doesn't land directly on the keel
3 entering the water -- if it lands on -- you know, sideways or
4 broadside, you would see similar types of damage.

5 Q. Okay. And I could show you some other -- there's also damage
6 to the, you know, to the port side also of this lifeboat. So
7 that's still, that's still starboard side. That's still starboard
8 side. Okay. That's the port quarter -- that part over there.
9 This is about port midships. Let's see, that port midships, this
10 is photo number 0625. Would that be the same kind of --

11 A. Yeah, that --

12 Q. -- impact damage you're talking about?

13 A. That type of damage, given the rolling of the ship, you would
14 expect to see similar types of damage. The damage that you've
15 seen on the outboard side of the lifeboat, that's damage
16 indicative of a fall and not a lifeboat actually being released.
17 You wouldn't see that type of damage from wave action. That's
18 impact damage.

19 Q. Okay. The difference between a fall and being released -- so
20 release would be the crew?

21 A. Release would be the boat is lowered to the waterline and
22 then released from the hooks.

23 Q. Uh-huh.

24 A. A fall would be either by intentional action or unintended
25 action the boat has somehow been released from a significantly

1 high height and has fallen to the water.

2 Q. Okay. In your experience, have you seen cases where
3 lifeboats have fallen, not through humans causing, you know, an
4 accident, accidental being released --

5 A. Yes.

6 Q. -- or falling?

7 A. Yes. There are. There are numerous cases out there. The
8 most recent one that I've been involved with was on board the *Paul*
9 *Gauguin*, and that was, I think maybe 2 or 3 months ago. I
10 actually did a report on that. And the boat when it landed in the
11 water was a total loss.

12 Q. Okay. And how did that lifeboat fall?

13 A. There was a failing of the loose gear -- the D link
14 suspension ring. Evidence suggested that there was a crack that
15 propagated. And once it propagated, it separated. The D link
16 then elongated and separated, and the -- I don't remember if it
17 was the forward link or half link, but one of the hooks was able
18 to release. The lifeboat was too heavy to be held by the link
19 that remained in place, and eventually it fell into the water
20 after landing on the deck, and then into the water.

21 Q. Was this a freefall lifeboat or was it a --

22 A. It was a conventional lifeboat.

23 Q. Conventional. Okay. So the gripes didn't hold -- the gripes
24 were tight and didn't -- weren't able to hold it?

25 A. Well, the gripes aren't load-bearing. The gripes only, are

1 only carrying a transverse load to keep the boat secured
2 alongside. The load-bearing components would be the loose gear
3 and the release gear itself.

4 Q. Okay.

5 A. And loose gear being the wire falls.

6 Q. Okay. So the gripes aren't load-bearing -- okay.

7 MR. KUCHARSKI: This is Mike Kucharski. So the boat was in
8 the complete stowed position, and it let go? Or was it -- were
9 they preparing to lower it?

10 MR. DEVANEY: It was in the stowed position. And I have no
11 problem sharing the report, because Harding's released the report.
12 But you can see from the evidence that there was a crack, one that
13 you would not normally see by eye, and this has raised some issues
14 for the loose gear now being subjected to additional inspections
15 periodically.

16 BY MR. FURUKAWA:

17 Q. Okay. And so, it just slips through the gripes? The gripes
18 just slip off the boat?

19 A. Well, the D link would have separated itself. So once that
20 would have separated the -- it would have slipped through the
21 hook. And then because of the weight, the other systems would not
22 have been able to hold up.

23 Q. Okay. And this -- in this instance, was this pier side or
24 was it at sea?

25 A. The vessel was actually at sea at the time of the incident.

1 Q. Okay.

2 A. But the weather conditions were calm. So, that was not
3 considered to be a causal factor. The causal factors on this
4 occasion was that the material of the D link was substandard. The
5 dimensions of the D link were undersized. And there were a list
6 of other causal factors in that case.

7 Q. Okay.

8 MR. KUCHARSKI: So, when Jon asked you about -- this is Mike
9 Kucharski again. Jon asked you about the gripes. So the gripes
10 and the locking bar, in and of themselves, won't hold the boat in?

11 MR. DEVANEY: They're not carrying the main load. They're
12 not the main load-bearing components. They're primarily just
13 keeping it from rocking, that would give you additional stresses
14 on the system itself.

15 MR. KUCHARSKI: Uh-huh. So it's --

16 MR. DEVANEY: Most of the load would be held by what is
17 called the loose gear, being the D links --

18 MR. KUCHARSKI: The hook.

19 MR. DEVANEY: -- the hook itself, and the block and fall wire
20 leading up to the structural arm of the davit.

21 BY MR. FURUKAWA:

22 Q. Okay. Yeah, I'd be interested in getting a copy of that
23 report. Okay. Let's see. This is head-on bow. So you can see
24 on the port side that -- port side of the bow, you have that
25 section --

1 A. Yes. If you go back to the previous photo, the one that we
2 were discussing initially -- not -- back one more.

3 UNIDENTIFIED SPEAKER: 21.

4 MR. DEVANEY: See, if you look at, if you look at the damage
5 to the -- the one just forward. Just forward. If you look at
6 that one --

7 UNIDENTIFIED SPEAKER: 0624.

8 MR. DEVANEY: Yeah. If you look at the damage sustained at
9 the propeller as well, that is clearly impact damage. That's not
10 wave damage. So, that in itself would suggest that this lifeboat
11 had actually fallen into the water.

12 BY MR. FURUKAWA:

13 Q. Okay. Impact damage -- the hull of the ship, a container,
14 or --

15 A. Impact -- it could be impact with the boat actually landing
16 onto the water itself.

17 Q. Water itself can do that?

18 A. But falling from a significantly high height and then landing
19 onto the water.

20 Q. Okay. Okay.

21 A. Because had the boat -- the type of damage that you would
22 expect if the boat was actually launched into the water, would not
23 be to that extent. Because the boat would roll and turn, capsize,
24 and you have that sort of damage. But if the -- if that lifeboat
25 had actually fallen from a significantly high height and landed

1 into the water broadside, that's the type of damage that you would
2 expect to see. And once that would have happened, the lifeboat
3 certainly would have been rendered useless.

4 Q. Okay. So you said landing broadside in the water or would
5 that be stern --

6 A. Broadside. Broad -- that would not --

7 Q. -- not stern first?

8 A. Broadside would be on the side. But that impact to the
9 propeller is definitely from -- that's impact damage. That's not
10 wave damage.

11 Q. Okay. But not necessarily stern first, but broadside into
12 the water --

13 A. Yeah.

14 Q. -- could have caused that? Okay.

15 A. That would have been the leading edge into the water.

16 Q. The leading edge? Okay.

17 Yeah, that's also the port bow. So, you know, the *El Faro* --
18 all I can see is the "O" from *El Faro*. You know, so there's
19 damage to the port side, you know, on the quarter, on the bow, in
20 that broken-up part. The midship's on the bottom. But on the
21 starboard side there's just that huge section that's ripped away.
22 There's the --

23 A. I can share with you a photo from the *Paul Gauguin*. But you
24 can see that the upper canopy has been damaged, and it's because
25 of the impact from the lifeboat when it actually hit the water.

1 Not from hitting the deck. I'll just show you a photo of that.

2 Q. So you think you've seen enough of this? You want --

3 A. Yeah. For now, I think. Unless there are other photos. But
4 the extent of the damage to the hull itself, I mean, it's pretty
5 safe to say that would not have been from wave action.

6 Q. Okay. Not wave action. Okay.

7 Let me bring up some photos, some underwater photos from the
8 VDR search mission. Let's see. I've got some broken davits, but
9 let me do the port lifeboat first. These are some mosaics -- it's
10 not that great. This is -- here's number 4. These are -- okay.
11 We'll just have to --

12 A. Okay.

13 Q. This is on the bottom of the ocean. This is the port
14 lifeboat with a few photos kind of put together. This one is
15 lifeboat M4, is what it's entitled. It's -- let's take a look at
16 another one before that. This is -- this one is entitled M3,
17 Lifeboat M3.

18 A. So am I right in saying that in both photos the complete
19 stern is missing?

20 Q. Yes. That's what I've seen. And in your professional
21 opinion, can you describe that and, you know, what you think would
22 have caused damage like that?

23 A. Again, the damage sustained there would have been caused by
24 one of two things. It would have either been through impact
25 damage with the vessel hitting the side of the ship while trying

1 to be launched and the vessel itself rolling. Then you would have
2 that type of damage, which can be quite significant. The other
3 type of damage would have been if the vessel or the lifeboat was
4 unintendedly or intentionally released and fell to the water from
5 a significantly high height.

6 And in the case of this lifeboat, let's say the forward
7 release gear held the boat longer and the boat fell stern first --
8 the lifeboat in question fell stern first. Then, the impact of
9 the stern could render such damage.

10 UNIDENTIFIED SPEAKER: So, what (indiscernible).

11 MR. DEVANEY: So you've got mechanical damage happening from
12 all types of angles. But it would primarily be with the side of
13 the lifeboat that is meeting with the side of the ship -- on
14 contact with the side of the ship. And then if it fell into the
15 water, depending on the position on impact.

16 BY MR. FURUKAWA:

17 Q. Okay. I was curious, you know how this tear is almost
18 straight across. Could that have been caused by the gripes? Or
19 you --

20 A. Well, yes. Yes and no. If the vessel is rolling and there
21 is any play in the motion of the lifeboat, in its swinging motion,
22 and something is trying to hold it back, in terms of the gripes,
23 then you can have a situation like that where it's an unintended
24 consequence, but -- you're now actually sustaining damage as a
25 result of the gripes. But it all depends on how the gripes were

1 arranged to secure this boat in place.

2 MR. FURUKAWA: Okay. Okay. Liam, Drew, any comments?

3 BY MR. FURUKAWA:

4 Q. So here's -- I guess as they were -- they discovered it.
5 They saw the reflective material at, you know, 15,000 feet below
6 the sea level.

7 A. Uh-huh. Yeah. Because of the material that's used to
8 manufacture the boats, it's all GRP, and --

9 Q. What's GRP?

10 A. Glass reinforced. You know --

11 Q. Or all plastic?

12 A. Yeah. The --

13 Q. Fiberglass?

14 A. Fiberglass.

15 Q. Glass reinforced plastic. Okay.

16 A. You have so many different terminologies. But, yeah, so
17 basically because of the type of material in use, you know, once
18 you have a weak point or a tear, what they would call laminate
19 shearing, it just continues to rip right through.

20 Q. Okay. Because on this photo, which is entitled Lifeboat
21 Bow 1, see only, you know, on the starboard bow -- I think
22 that's --

23 A. Yes.

24 Q. -- you know, that's about where the gripe would be also.

25 A. Yes. You would have two gripes, one forward, one aft.

1 Q. So the aft one kind of where that straight off flung tear --

2 A. Yes.

3 Q. -- and you have that --

4 A. Well, keep in mind, you would not see that type of damage
5 unless there was slack in the gripes and the boat was allowed to
6 move. If it was being held firmly in place, then you would not
7 see that.

8 Q. Wouldn't see that? Okay.

9 A. No.

10 UNIDENTIFIED SPEAKER: Where does the loose gear connect to
11 the boat?

12 MR. DEVANEY: To the actual hook.

13 UNIDENTIFIED SPEAKER: But, I mean, where on the boat would
14 it be? I mean, it almost looks like there is some significant
15 hardware here.

16 MR. DEVANEY: Yeah. This would be the tow line -- tow
17 ranger.

18 UNIDENTIFIED SPEAKER: Okay. That's not anything --

19 MR. DEVANEY: Right. And here would be the hook and --

20 UNIDENTIFIED SPEAKER: Okay. All right.

21 MR. DEVANEY: So in relation, it would be --

22 UNIDENTIFIED SPEAKER: So that's the hanger there?

23 MR. DEVANEY: Yeah.

24 UNIDENTIFIED SPEAKER: Okay.

25 MR. DEVANEY: So, here -- this would be keel shoe here. And

1 then the hook would be directly connected to the keel shoe. This
2 would be just be a painted line on the lifeboat.

3 UNIDENTIFIED SPEAKER: Okay. Okay. It just looks pretty
4 massive in that picture, so it's -- I mean, it almost looks like a
5 wire rope.

6 MR. DEVANEY: If you look at the photo here of the *Paul*
7 *Gauguin*, you would think that that is a boat that has actually hit
8 something. That's a boat that's hit the water.

9 UNIDENTIFIED SPEAKER: Wow.

10 MR. DEVANEY: So that's the impact from wave damage.

11 BY MR. FURUKAWA:

12 Q. Okay.

13 A. And this was on a calm day.

14 Q. A calm day. Okay. Not in a hurricane force 3 or force 4.

15 A. And that's a partially enclosed lifeboat.

16 Q. What type of vessel was the *Paul* --

17 A. It's a cruise ship.

18 Q. A cruise ship?

19 A. I'll provide you with a copy of the report.

20 Q. Okay. Let's see. Oh, that's living quarters. Okay. Let me
21 look at some of the davits here. And this is an intact davit. We
22 have intact and damaged. I think this is the starboard side.
23 Yeah. We're looking at intact davit 1. I think this is the
24 starboard side. I think this is the bridge wing over here. So,
25 this is forward and that's going aft. And this is the good one.

1 A. Now, looking at the davit, it looks like the davit is not in
2 the outboard position. And typically if you're abandoning a ship,
3 you would not be concerned with recovering a davit.

4 Q. Uh-huh.

5 A. So this picture paints a thousand words almost. That would
6 indicate -- if that davit is truly in the stowed position, that
7 the davit never launched the lifeboat.

8 UNIDENTIFIED SPEAKER: And this is the davit for the lifeboat
9 that we saw on land that had significant hull damage --

10 MR. FURUKAWA: Correct.

11 UNIDENTIFIED SPEAKER: -- on the, on the starboard side.

12 MR. FURUKAWA: Starboard --

13 UNIDENTIFIED SPEAKER: Well, actually on both sides.

14 MR. DEVANEY: Right. When a vessel is abandoning ship, there
15 is no protocol for recovering a davit.

16 UNIDENTIFIED SPEAKER: Of course. Yeah.

17 UNIDENTIFIED SPEAKER: Is it feasible at all that as the
18 vessel itself hit the bottom of the ocean that the davit, you
19 know --

20 MR. DEVANEY: Would come back in place?

21 UNIDENTIFIED SPEAKER: -- come back in place, or the flow of
22 the water would push the davit back in place?

23 MR. DEVANEY: To such a perfect position, no.

24 UNIDENTIFIED SPEAKER: Okay.

25 BY MR. FURUKAWA:

1 Q. So, it's too neat of a position?

2 A. That is almost a stowed position.

3 Q. Okay.

4 A. A secured position. We can say that.

5 MR. FURUKAWA: Okay. Liam, any questions about this?

6 MR. LaRUE: No.

7 MR. DEVANEY: If there was a chance of -- I mean, if we were
8 to assume that there was wave action that put the davit back in
9 place, you would probably see one arm in place and not both.

10 MR. FURUKAWA: Okay.

11 MR. DEVANEY: But that position there is too --

12 UNIDENTIFIED SPEAKER: Perfect.

13 MR. DEVANEY: -- perfect of a stowed position.

14 BY MR. FURUKAWA:

15 Q. Okay. And we're now looking at intact davit 2, the photo.

16 It's pretty much the same. Let's see. So between the two davit
17 arms, what do you think this is?

18 UNIDENTIFIED SPEAKER: It looks like a railing.

19 MR. FURUKAWA: Oh, the railing?

20 UNIDENTIFIED SPEAKER: Yeah.

21 MR. FURUKAWA: Well, so a section of the railing not from
22 here. Just in a couple here. Okay.

23 MR. DEVANEY: Yeah.

24 BY MR. FURUKAWA:

25 Q. Okay. Any comments with this one?

1 A. Yeah. Again, just the fact that the davits appear to be in
2 the stowed position. So --

3 Q. Okay. Here's another photo of a --

4 UNIDENTIFIED SPEAKER: Yeah, that's just a long section of
5 railing, it looks like.

6 UNIDENTIFIED SPEAKER: Yeah.

7 UNIDENTIFIED SPEAKER: Yeah.

8 BY MR. FURUKAWA:

9 Q. That was davit number 3. This is a photo, Intact Davit 3-
10 Alpha. Any comments here?

11 A. No. Again, the same.

12 Q. Okay. Or intact davit 4? I guess this is the aft deck, the
13 aft arm. Let's see if I can find --

14 UNIDENTIFIED SPEAKER: Would there be railing inboard of the
15 davit? Is that where that long piece of railing would have come
16 from?

17 MR. DEVANEY: Well, what they will do sometimes -- for
18 loading requirements for ships, you want to protect a person from
19 falling overboard. And so on occasion, some ships will have
20 collapsible railings that would maybe just be secured by a
21 male/female post arrangement. I've not been on this ship, so I
22 don't know what the arrangements would have been. But most
23 probably, it could have been just a railing to prevent a person
24 falling overboard, particularly when handling the lifeboats.

25 UNIDENTIFIED SPEAKER: Yeah. So, it's unlikely that that

1 long stretch of railing has anything to do with this, this thing
2 that's hanging --

3 MR. DEVANEY: I see it, but I really couldn't say what it
4 was.

5 MR. FURUKAWA: But it probably isn't something from around
6 the davit. With that Intact Davit 3 photo, and if anything, I
7 guess, this would be like a midships section of the lifeboat when
8 it comes down from the --

9 UNIDENTIFIED SPEAKER: Usually they'd have like a chain
10 across there, or something.

11 UNIDENTIFIED SPEAKER: Yeah.

12 MR. DEVANEY: Yeah.

13 MR. FURUKAWA: That would probably be a -- a chain would
14 probably be across that, or -- that section seems a little too
15 long.

16 UNIDENTIFIED SPEAKER: Do you have pictures of the *El Yunque*
17 setup?

18 MR. FURUKAWA: Yes.

19 MR. DEVANEY: *El Yunque* is a sister ship?

20 MR. FURUKAWA: Yes.

21 MR. DEVANEY: Okay. Yeah.

22 UNIDENTIFIED SPEAKER: You got a lifeboat right there.

23 MR. FURUKAWA: What was --

24 UNIDENTIFIED SPEAKER: 0448.

25 MR. FURUKAWA: 0448. Okay. So, okay, Survival Image 0448 *El*

1 Yunque starboard lifeboat. And this would be the same as the
2 underwater photos of the davits. This -- there's that open
3 section.

4 MR. DEVANEY: Uh-huh.

5 MR. FURUKAWA: Right there.

6 MR. DEVANEY: Could it be that ladder? The blue ladder?

7 MR. FURUKAWA: This ladder here?

8 MR. DEVANEY: No. It's --

9 UNIDENTIFIED SPEAKER: The blue ladder.

10 MR. FURUKAWA: Oh, okay. The blue ladder. Okay.

11 UNIDENTIFIED SPEAKER: Can you go back to the underwater?
12 The blue ladder --

13 MR. FURUKAWA: It would be around here.

14 UNIDENTIFIED SPEAKER: Yeah. That looks just like a white
15 railing --

16 MR. FURUKAWA: White railing? Yeah.

17 UNIDENTIFIED SPEAKER: -- against the wheelhouse. Yeah.

18 MR. DEVANEY: Yeah.

19 MR. FURUKAWA: There's a lot of white railings.

20 UNIDENTIFIED SPEAKER: See, the actual arms themselves are --

21 UNIDENTIFIED SPEAKER: Yeah. I don't see the davit arms.

22 UNIDENTIFIED SPEAKER: Completely missing.

23 MR. FURUKAWA: Oh, okay. So you're talking about --

24 UNIDENTIFIED SPEAKER: The actual davit arms.

25 MR. FURUKAWA: Yeah. This part?

1 UNIDENTIFIED SPEAKER: Yeah.

2 MR. DEVANEY: Correct.

3 MR. FURUKAWA: Okay.

4 UNIDENTIFIED SPEAKER: So what does it tell you that those
5 are missing?

6 MR. DEVANEY: Go back again.

7 MR. FURUKAWA: Get a different view this one. Is that --
8 this is another view of the underwater.

9 MR. DEVANEY: Yeah. Let's see what other views we have.

10 MR. FURUKAWA: This one is davit number 1 -- Intact Davit 1.

11 MR. DEVANEY: Do we have any photos of before the incident on
12 *El Faro*?

13 MR. FURUKAWA: *El Faro*, no. Not --

14 MR. DEVANEY: Of the arrangement before?

15 MR. FURUKAWA: Just on the *El Yunque*.

16 UNIDENTIFIED SPEAKER: We don't have any -- I know there's
17 some pictures of the *El Faro* underway before the accident. You
18 might be able to zoom in a little bit and at least get a general
19 idea of the arrangement. I'm not sure where --

20 MR. FURUKAWA: Yeah. I have -- with me right now, I have *El*
21 *Yunque*, you know, the sister ship. But I don't have the --

22 UNIDENTIFIED SPEAKER: Right. You don't have, like, a close-
23 up of the lifesaving, but you've got a picture of the -- like a,
24 like a -- I know we've got some pictures, just the *El Faro*.

25 MR. FURUKAWA: Okay.

1 UNIDENTIFIED SPEAKER: That you might be able to look at and
2 see --

3 MR. DEVANEY: Yeah.

4 MR. FURUKAWA: Like --

5 MR. DEVANEY: Because what you can have is, although it's a
6 sister ship, you can have different equipment.

7 UNIDENTIFIED SPEAKER: Uh-huh.

8 MR. FURUKAWA: Okay. Let's see, that's -- let me pull it up.
9 Just that one, with -- the 0448. So looking at the -- let's --

10 UNIDENTIFIED SPEAKER: Is there a folder with just *El Faro*
11 pictures? I know there aren't a lot, but --

12 MR. FURUKAWA: Just *El Faro*. Okay. Maybe try the cadets --

13 UNIDENTIFIED SPEAKER: Yeah. See if there are any in the
14 cadet one.

15 MR. FURUKAWA: Deck E. These are mostly the cargo. Okay.

16 MR. DEVANEY: There you go.

17 MR. FURUKAWA: So this looks like the port looking from aft
18 forward, the port lifeboat. This one is image 0750.

19 MR. DEVANEY: Uh-huh. Let's see, we have another one?

20 MR. FURUKAWA: Can't see it over there.

21 UNIDENTIFIED SPEAKER: Can you zoom in on that at all? It
22 would be a little magnifying glass there.

23 MR. FURUKAWA: Oh.

24 MR. DEVANEY: Okay. There you go. Yeah.

25 MR. FURUKAWA: So this is image 0756 of the *El Faro*'s port

1 lifeboat, in port.

2 MR. DEVANEY: Yeah. So, again, when the boat would have been
3 launched that would have swung up or -- and the fact that it's
4 still hanging inboard is important, again. The fact that the arms
5 are missing -- we don't know the type of seas that they would have
6 been seeing. At least, I don't know.

7 MR. FURUKAWA: Do you want to -- the --

8 MR. DEVANEY: But if you conclude that you're getting wave
9 action at this height, the force from the wave action with the
10 boat pushing onto the arm itself is --

11 UNIDENTIFIED SPEAKER: Wait. So you're saying this part
12 moves?

13 MR. DEVANEY: Yes. Because this is the -- it comes up and
14 then once it's outward the --

15 UNIDENTIFIED SPEAKER: Oh, okay. I was thinking just the
16 arms moved, but --

17 MR. DEVANEY: Yeah. No, see --

18 UNIDENTIFIED SPEAKER: The arms would -- yeah.

19 MR. DEVANEY: -- in resting position, and this whole -- it
20 just comes out.

21 UNIDENTIFIED SPEAKER: Okay.

22 MR. FURUKAWA: Uh-huh.

23 MR. DEVANEY: Once it's vertical, then the boat rolls
24 (indiscernible). But this has to come out. Once that's upright,
25 then that -- the whole boat just comes and moves in that same sort

1 of motion. But this is actually how it will rest in place.

2 UNIDENTIFIED SPEAKER: Okay.

3 MR. FURUKAWA: We're talking about the seas. This is from
4 the National Hurricane Center. Let's see. Joaquin continued to
5 strengthen. It became a major hurricane on October 1st, winds 96
6 to 112 knots, and reaching maximum sustained winds of 120 knots, a
7 Category 4 hurricane, on October 2nd. So, you know, she went down
8 on the 1st, so the wind is 96 to 112 knots. And it just got worse
9 from there.

10 MR. DEVANEY: Uh-huh.

11 MR. FURUKAWA: You know --

12 UNIDENTIFIED SPEAKER: I got to step out, Jon.

13 MR. FURUKAWA: Okay.

14 BY MR. FURUKAWA:

15 Q. You know, a couple days --

16 A. Okay.

17 Q. -- a couple days later, on October 3rd, the hurricane
18 accelerated and reintensified, reaching a peak intensity of around
19 135 knots, just shy of Category 5 strength. And she finally lost
20 her major hurricane status on the 4th of October.

21 A. Yeah. I mean, given those types of conditions, I mean,
22 that's a lot of wave action that the vessel could have been
23 subjected to, as well as wind action -- wind forces. The damage
24 that you see is indicative of storm damage, but it's definitely
25 mechanical by some means. I don't -- I would be very surprised if

1 once the boat was in the water that that would be the results of
2 the waves itself.

3 Q. Okay.

4 A. Just looking at everything as it is, I would have concluded
5 that the lifeboats would not have been able to be launched in that
6 type of weather.

7 Q. Okay.

8 A. Right. Which is -- you know, the lifeboats are on -- the
9 whole launching system is not designed to launch in that type of
10 weather.

11 Q. Right.

12 A. It is just too much --

13 UNIDENTIFIED SPEAKER: Yeah.

14 MR. FURUKAWA: Right.

15 MR. DEVANEY: -- movement and motion.

16 BY MR. FURUKAWA:

17 Q. Right.

18 A. You want to have as stable a platform as possible. The whole
19 list issue with launching lifeboats comes into play when a vessel
20 has survivability, and you've have got time to lower the lifeboat
21 but the vessel may be subjected to a list, which is different.

22 Q. Uh-huh.

23 A. You know. But when you've got significant rolling of a ship
24 and everything else, all the other forces, conventional lifeboats
25 would not be able to launch in that type of condition.

1 Q. Okay. And that's conventional lifeboats, both --

2 A. Twin fall. Twin fall.

3 Q. Twin fall. You mean post-1986.

4 A. Well, even lifeboats of today's standards, you would have a
5 very difficult time to launch with a vessel having significant
6 rolling conditions.

7 Q. Okay. A freefall lifeboat?

8 A. A freefall lifeboat would be able to launch. However, the
9 point of entry may be not as designed, so it may introduce an even
10 more dangerous situation with -- because if the freefall lifeboat
11 does not enter the water as designed, you can have forces exerted
12 on the occupants quite high that result in bodily damage.

13 Q. And a freefall lifeboat is designed to enter bow first?

14 A. A freefall lifeboat is designed to enter bow first, submerge
15 and then resurface.

16 Q. Okay.

17 A. And in the case of freefall lifeboats, there have been cases
18 where persons have sustained significant injury -- back injury,
19 spinal cord injury. There have been cases where the boat being
20 launched from a significantly high height, the upper canopy has
21 been subjected to significant forces and have collapsed so it now
22 requires reinforcement. But again, you know, the boats are to be
23 launched in fairly moderate sea conditions but not in conditions
24 that you would see during a hurricane.

25 Q. Okay.

1 A. That's not in the design standard.

2 Q. Okay. Do you know of any cases where a freefall lifeboat was
3 in a hurricane and the crew survived?

4 A. I know of none.

5 Q. None. Okay. Would you have known if anything happened --
6 you know, good news instead of bad news?

7 A. If a lifeboat was able to be used to safely recover persons
8 during that type of storm, I think manufacturers would like to
9 showcase that product. And unfortunately, I don't know of any
10 lifeboat that would have been used in such case.

11 Q. Okay. And let me -- before we --

12 A. In fact, you know, the lifeboat is supposed to be your final
13 means. And if the ship that you're on can't sustain the damage of
14 the weather conditions or whatever environment, then it's unlikely
15 that the lifeboat will, you know.

16 Q. And before we move on from photos, I want to show you the
17 other davit. This one is entitled Broken Davits 1. So I guess
18 this would be the port boat -- or the port davits.

19 UNIDENTIFIED SPEAKER: So the same davit that was in that
20 cadet picture.

21 MR. DEVANEY: Uh-huh.

22 BY MR. FURUKAWA:

23 Q. You're right. Okay. So, this is the view forward --

24 A. Uh-huh.

25 Q. -- and aft.

1 A. Well, that type of damage you would typically see -- if --
2 and you see this a lot in shipyards, for example. If a hurricane
3 comes through a shipyard, the forces of the wind can topple a
4 davit.

5 Q. Uh-huh.

6 A. That is the case with a shipyard in Grand Bahamas right now.
7 The davit is just recently toppled as a result of -- or the crane
8 has been toppled as a result of Hurricane Matthew. Another impact
9 force that could have damaged the davit would obviously be wave
10 action. If you had green seas at that height, the wave action and
11 forces could result in that type of damage.

12 Q. That severe damage?

13 A. Yeah.

14 Q. Okay. Where the aft one appears broken?

15 A. Uh-huh.

16 MR. KUCHARSKI: Is there any way to tell from this photo,
17 particularly the davit on the left there, whether it was deployed?
18 Whether it was -- you can see the arm there. Is there any way to
19 tell, you think, Tio, whether or not it was in the stowed or the
20 deployed position?

21 MR. DEVANEY: Without actually -- I mean, the actual movement
22 of the davit arm to bring the boat into vertical so that it could
23 be lowered is not that much.

24 MR. KUCHARSKI: Uh-huh.

25 MR. DEVANEY: Right. So it makes it very difficult to tell

1 from this photo whether or not it had to have moved.

2 MR. KUCHARSKI: Okay.

3 BY MR. FURUKAWA:

4 Q. Could the damage to the davit arm on the right -- if for some
5 reason the boat was launched, could the davit on the right been
6 that kind of damage to it?

7 A. Yes. Because then it would have been an appendage almost,
8 yes. In the direct line of that wave of action, if it was --

9 Q. Okay. It would have to come from that one and not the other
10 one. Okay. Here's another one. Here's another photo, Broken
11 Davits 3.

12 A. Yeah, the -- because the way the hooks -- I don't remember if
13 the hooks themselves were on-load releasers. I do believe they
14 were off-load hooks on this boat. And if they were off-load
15 hooks, then it would not have been a case of the boat being stuck
16 in the falls. The water coming from below would have actually
17 lifted the boat out of the hooks, and it may have been a case of
18 maybe one hook still being connected. So it's a combination of
19 things that could have happened there.

20 Q. Okay. So this is the -- so this Broken Davits 3 photo, I
21 believe this would be on the port davits. And that's also the
22 photo of the lifeboat that was --

23 A. Significantly damaged.

24 Q. -- in the water, the one with the straight cut.

25 A. Uh-huh.

1 Q. Okay. Do you see any wave damage that --

2 A. Yeah. It -- I would say wave damage first. Because with the
3 lifeboats, the GRP would give -- if it is secured, and you have a
4 significant force on it, the GRP would give first. Because the
5 GRP is -- the structural strength on the GRP is minimal,
6 especially for lateral forces. The keel is the most reinforced
7 part, and that's because that's the part that has been tested for
8 damage testing. The side has been tested as well, for damage.
9 But the testing that is done is nowhere near what they would see
10 in a hurricane. It's just moving the boat off from the side of
11 the shell about 3 meters and letting it, one time, hit the side of
12 the ship or side of the wall, for prototype testing.

13 Q. Okay. Can we go into what you know about pre-1986 --

14 A. Okay.

15 Q. -- building standards, post-1986 lifeboat building standards,
16 and, you know, what kind of lifeboat a vessel like the *El Faro*
17 would have today, especially if, you know, if it would have a
18 freefall, I guess, lifeboat.

19 A. Okay. Well, if we start off from -- the original type of
20 lifeboat were always open-type lifeboats. And, you know, over
21 time there's been a number of changes. In the early '80s, they
22 made efforts to change the design standards, but because of the
23 IMO's mechanism, the regulations didn't actually enter force until
24 '86. Right. Up until that time, open lifeboats were permitted.

25 And the open lifeboats had what they would consider to be

1 off-load hooks. So the off-load hooks meant that when the boat
2 was lowered into the water you can simply release the hooks by
3 hand. That proved to be a challenge, because if you're in any
4 rough sea condition and you have load on one particular hook, it
5 makes releasing the load off of the other hook -- and you would
6 end up with a situation where you couldn't release the lifeboat
7 from the ship. So that is what prompted the changes to the design
8 standards.

9 Following '86, you had on-load release hooks. So a ship of
10 this type built after 1986 would have been required to have
11 lifeboats that have on-load release hooks. If it is a cargo ship,
12 then it would be required to have a totally enclosed lifeboat, and
13 the arrangement can be determined by the operator. So you have
14 two options, basically. You can have either a totally enclosed
15 lifeboat launched by conventional means -- twin fall davits down
16 the side of the ship into the water -- or you can have a freefall
17 lifeboat.

18 Q. Okay.

19 A. The design standards, the structural design standards for
20 lifeboats have not changed that much, even pre-'86. The
21 lifeboats, when designed, there was no minimum structural
22 thickness for the GRP. That is not written anywhere in the LSA
23 code or in the MSE recommended guidelines on design standards.

24 The way they test the structure itself is by doing damage
25 testing. And damage testing involves dropping the lifeboat into

1 the water, a height typically about 3 meters. It involves
2 allowing the lifeboat to be pulled from the side of a wall or
3 rigid surface so that it can have momentum reflective of it being
4 on a ship and wave motion. It only has to smash and hit the wall
5 one time.

6 There is floodability standards. So for (indiscernible) for
7 open lifeboats, the designs should be able to be flooded and still
8 have reserve buoyancy. There is a requirement for righting. So
9 if the lifeboat of today's standards were to be capsized, they
10 should have self-righting capabilities.

11 So self-righting, damage testing, reserve buoyancy, those are
12 just some of the new requirements. And obviously the requirement
13 for propulsion as well.

14 Unfortunately, because vessels have been grandfathered in
15 pre-'86, they didn't have to comply with these standards. But it
16 was recognized in the industry that the standards on pre-'86
17 vessels were pretty much subpar.

18 Q. So you said that you were -- you're a surveyor for many
19 different countries.

20 A. Yes.

21 Q. The *El Faro* was U.S. registered, and I guess the IMO allowed
22 the grandfathering. These other vessels that you see and survey,
23 do they allow grandfathering also?

24 A. Yes. The IMO set the standard for, you know -- the
25 recommendations certainly, and it's up to the member states to

1 enact their own legislation to take it forward. But as far as my
2 experience goes, I have not seen any administration that has
3 completely banned the use of open lifeboats. I think it was
4 understood that, given the lifespan of a vessel, we would not be
5 having this discussion now. Because the design life for these
6 types of ships are typically 25 years, 30 if you're lucky.

7 Q. Okay. And the *El Faro* was 40 years old.

8 A. Correct.

9 Q. 1975 she was launched. Okay. Well, is that explicitly
10 stated for IMO, that the lifespan of the ships, you know, that
11 these are --

12 A. No, that is engineering design standards. Basic naval
13 architectures would say if you're designing a naval ship, naval
14 ships will be typically designed for about 20 years lifespan --
15 useful lifespan. If you're going to go beyond that, you have to
16 do major revitalization to the ship. And if we get into the case
17 of replacing steel, once you reach the 50-ton requirement, then
18 it's actually a new ship. And once you enter that stage, it
19 should be taking on the requirements applicable for a new ship.

20 But as often the case is, they kind of mix and match whatever
21 suits the individual at the time. So the thought is to bring the
22 ship in compliance with the latest requirements as far as
23 practicable.

24 Q. Okay. You said replacing steel and you mentioned 50 tons.

25 A. Yes.

1 Q. Is that a -- is that written?

2 A. That is -- it is in the regulation. It is a -- the 50-ton
3 rule, when it comes into the stage of rebuilt. The exact location
4 of the regulation I would have to dig up. But certainly that is
5 used as a reference point for a rebuilt vessel, the 50-ton steel
6 replacement.

7 Q. Okay. And that doesn't matter if it's a 100,000-ton vessel
8 or a 50,000-ton vessel?

9 A. I've been trying to pull up my rule finder throughout.

10 UNIDENTIFIED SPEAKER: I've got one in my office, if you
11 want.

12 MR. DEVANEY: Yeah.

13 BY MR. FURUKAWA:

14 Q. And what's the -- what pub are you looking for now?

15 A. It is a --

16 Q. Is it SOLAS, or --

17 A. Yeah, it's basically SOLAS.

18 Q. Would this be in the LSA, like the --

19 A. No, it would be the Safety of Life at Sea.

20 BY MR. KUCHARSKI:

21 Q. I tell you what. This is Mike Kucharski. While you're
22 looking that up, is that 50-ton replacement if you swap -- if you
23 take off 50 tons of steel, put 50 tons of steel on -- or is it
24 just a pure addition of 50 steel?

25 A. No, not -- it has to do with steel replacement. So, for

1 example, on the hull, it's talking about hull steel replacement.

2 Q. Okay.

3 A. So it's not adding something to the ship that's equivalent to
4 50 tons. It's if you start removing shell plating.

5 Q. Shell plating. And that -- is that below the watertight
6 deck?

7 A. I do believe it references the hull. It just says the hull.

8 Q. The hull.

9 A. The hull of the ship. So -- but I want to be clear so I'm
10 trying to find the actual reference.

11 Q. So, of course, we need to know what the definition of hull is
12 in SOLAS, right? It's just like falls.

13 A. Loose gear.

14 Q. Yeah.

15 MR. DEVANEY: All right. I will pull that out for you.

16 BY MR. FURUKAWA:

17 Q. Okay. Another question: The *El Faro* was extended by, what,
18 90 feet?

19 MR. KUCHARSKI: Yeah, 90, 100 feet. Midbody.

20 BY MR. FURUKAWA:

21 Q. Okay. So if she was cut in half and had 90 feet, you know,
22 of new steel extension and all that, would that count for that
23 50-ton rule?

24 A. It comes down to the administration. So, some
25 administrations would interpret the requirements differently.

1 You've had a number of ships that had extensions carried out and
2 then that sets a new date at which time some rules and regulations
3 would apply. But it would be understood that they're only doing
4 it as far as practical. That's the key word that's often thrown
5 around in the regulations, reasonable and practical.

6 Q. Okay.

7 A. And it comes down to the administration interpretation.

8 Q. Okay. For the *El Faro's* lifeboats and davits, what I
9 understand what you're saying is that the gravity davits are still
10 in use today.

11 A. Yes. You still have gravity davits in use today.

12 Q. But the open lifeboats are not?

13 A. The open lifeboats is what has gone away.

14 Q. Okay.

15 A. And then the additional requirements for the davit has to do
16 with list and trim.

17 Q. List and trim. Okay. Do you know what those pre and post
18 list and trim --

19 A. I can give them to you specifically. I think it's now 15 and
20 20 -- is it 15 and 20? But I can give it to you specifically.

21 Q. Okay.

22 A. Yeah.

23 Q. Okay. So if the davits -- the old davits met the new
24 requirements, they would be fine, but if they didn't, then that
25 would probably be a major --

1 A. Well --

2 Q. -- replacement?

3 A. Again, it comes down to the administration. There was
4 nothing prohibiting the operators from installing the latest and
5 greatest equipment. But there is the phrase that is called
6 minimum requirements, and that is what operators typically fall
7 back on.

8 Q. Okay. Just curious, do you know how much a lifeboat costs?
9 If -- I guess if the davits were okay, to just replace the
10 lifeboats from -- the open lifeboats to a totally enclosed, do you
11 know --

12 A. Well, there are a number of factors that you have to take
13 into consideration. You have to take into consideration the
14 number of persons that the lifeboat is going to be designed for,
15 whether it's going to be partially enclosed, fully enclosed, the
16 type of pulley system and machinery, the length of the lifeboat --
17 that is a key element. The lifeboat has to be -- the distance
18 between the hooks has to line up almost perfectly with the davit
19 itself.

20 Q. So it would be a custom built? Not an off-the-shelf kind
21 of --

22 A. Correct.

23 Q. Okay.

24 A. And in the case of the *El Faro*, because of the --

25 Q. 25'6", I think it is.

1 A. Right. So you would have to find a lifeboat with hook
2 distances that match that. And if you don't, then you run into
3 the situation where you've got design and engineering cost and
4 then production costs, because it's a one-off, a lead -- so
5 there's a lot of variables. But if it's one where -- and a lot of
6 operators now look to see if they can maybe move the position of
7 the davit arms, because that's another option. But again, you
8 want the davit arms to be on a reinforced portion of the ships and
9 not just on the shell plating itself.

10 Q. Okay.

11 A. So there's a lot of factors that you have to consider. But
12 if you just look at lower-end cost for a complete system for
13 today's standards -- let's say you're looking for something to
14 accommodate, maybe, 25 to 30 persons --

15 Q. These were 43 persons.

16 A. Okay. If we use a 50-person as a rough gauge, complete
17 system -- davits, wenches and boat -- you would be looking
18 somewhere upwards of a quarter of a million dollars per system.

19 Q. Per system?

20 A. Per system.

21 Q. Okay. So a half million for two, port and starboard. Okay.

22 A. Yeah.

23 Q. Okay.

24 A. So now you answer the question of is it feasible for the
25 operator to -- when they go into that major refit of a cargo ship,

1 in particular, to invest that type of money? And then what
2 operators would typically do is they would say, well, the age of
3 the ship, we're not going to keep it for that much longer. That's
4 the argument that they typically throw out.

5 Q. Okay. Have you ever seen a ship where they -- maybe they did
6 away with the conventional lifeboats and then built like a stern
7 launched -- you know, a freefall, gravity launched lifeboat on the
8 stern?

9 A. It is very rare that you come across ships that would do
10 that. Only because the whole arrangement of the ship from the
11 initial design and build takes that evacuation into account.

12 Q. Uh-huh.

13 A. So you would have means of egress and evacuation routes to
14 your positions of evacuating the ship. And in the case of a
15 freefall lifeboat, you would need typically -- the launch
16 mechanism is a significant component. And when you now move
17 weight from port and starboard on the ship and you put it all on
18 the stern, you've effectively changed your loading conditions or
19 the true instability of the vessel. So it's very, very unlikely
20 that you would do -- you would come across a scenario like that,
21 unless you're going to counter that weight at someplace else.

22 Q. Okay. Curious that you mentioned the evacuation egress. I
23 know on tankers you have the requirements, okay, the egress for
24 fire, to get to the lifeboat safely.

25 A. Yes.

1 Q. Would there -- are there also those kind of requirements for
2 a cargo ship like, you know, the Ro-Lo?

3 A. The Ro-Ro's? Yes. They would --

4 Q. Or (indiscernible), I guess.

5 A. They would still have to have in their safety plan evacuation
6 routes, primary and secondary means of evacuation. It's all a
7 risk-based approach, looking at the ship design. So even after it
8 would have been built, and maybe not as applicable at the time of
9 build as it is now, at today's standards, they're required to
10 clearly show what the evacuation route would be.

11 Q. Okay. Because I've seen on new build ships, chemical
12 tankers, that have stern launched -- or, you know, freefall
13 lifeboats. But it looks like there's just an open ladder, you
14 know, going up to the lifeboat. Or, you know, it looks -- doesn't
15 look like it has any protection from fire or weather. And in this
16 case, for the *El Faro*, you know, you're talking 97 -- 96 to 112
17 knots of wind. You know, you need some kind of an egress, you
18 know, sheltered egress route.

19 A. Well --

20 Q. You couldn't have something just open --

21 A. Again, I mean, if I reflect back onto my days at sea, in
22 harsh weather conditions you would never walk out on the deck
23 alone. You would always use the buddy system approach.

24 Q. Uh-huh.

25 A. In the case of evacuating the ship and protecting one from

1 the elements of the weather, you know, not very many ships
2 actually have that requirement because the lifeboats or survival
3 systems would be on the outer decks anyway. And in the case of
4 the conventional lifeboats launched over the side, typically there
5 would be an access ladder, where they would either -- the crew
6 would board the vessel, bring it alongside, then the rest of the
7 occupants would enter lower to the water.

8 In the case of a freefall lifeboat launch from the stern,
9 everybody will then make their way to the platform at which they
10 would board, load up into the freefall lifeboat, and on command
11 they would just launch and away they go.

12 Q. Okay. Have you seen a freefall system where the egress route
13 is protected from weather and fire and all that?

14 A. Not that I can recall, where it's been designed specifically
15 for protection of occupants in a fire evacuation.

16 Q. But getting to the lifeboat, where it's protect from fire and
17 weather?

18 A. There are additional factors that are taken into
19 consideration from the design perspective where a lifeboat is
20 positioned. So, for example, if a lifeboat on a passenger ship,
21 in particular, is in an area where there may be a fire inboard,
22 then the cooling mechanism in that area would be such that it
23 would protect the the lifeboat arrangement. So there are design
24 standards taken into consideration to protect the system so that
25 the system can still be used -- a reinforcement of steel or

1 insulation on steel to prevent heat rise.

2 Q. Okay.

3 A. Those types of factors. But to say whether it has a safe
4 protection for persons for the elements of the weather, I can't
5 recall.

6 MR. FURUKAWA: Okay. Okay. Mike, anything?

7 MR. KUCHARSKI: No.

8 MR. FURUKAWA: Okay.

9 MR. KUCHARSKI: I don't think so.

10 I just wanted to be sure. You say a quarter of a million,
11 the davits, the boat, and everything else? A 50-person lifeboat?

12 MR. DEVANEY: For merchant ships, yeah --

13 MR. KUCHARSKI: Yeah.

14 MR. DEVANEY: -- you're looking at about a quarter of a
15 million.

16 MR. FURUKAWA: You say that's low end?

17 MR. DEVANEY: That's going to be -- yeah. I mean --

18 MR. KUCHARSKI: That's for a covered lifeboat?

19 MR. DEVANEY: For a totally enclosed lifeboat.

20 MR. KUCHARSKI: Uh-huh.

21 MR. DEVANEY: About a quarter million per set.

22 BY MR. FURUKAWA:

23 Q. And if it was just a freefall system, also a quarter million?

24 A. The freefall system would be less. But then you have a lot
25 of the structure that you, you know --

1 Q. Okay. You have to either beef it up -- beef up the steel or
2 do something with the ballast.

3 A. Yeah.

4 Q. Okay. The current ballast and all that. Okay.

5 A. But if you're looking purely at an incident rate, I think
6 there's sufficient evidence out there that would suggest that
7 freefall lifeboats -- the risk of freefall lifeboats associated
8 with incidents and accidents are far less than the risk of -- or
9 the -- I wouldn't say the risk. The rate of incidents and
10 accidents associated with freefall lifeboats are far less than the
11 rate of incidents and accidents associated with conventional
12 lifeboats. And there is adequate data to support that statement
13 out there.

14 Q. Who put out this data?

15 A. Well, if you look at just the IMO or even the MAIB, which
16 would be equivalent to the NTSB here in the U.S., they retain a
17 lot of that information. They've been tracking this for some
18 time.

19 Q. Okay.

20 A. And when you look at the changes in the design standards for
21 lifeboats, there were no changes for freefall lifeboats. All of
22 the changes pertain to conventional lifeboats.

23 Q. Okay.

24 A. And it was geared around the release and retrieval systems.

25 Q. Okay. So what you're saying is that, is that freefall

1 systems are safer than conventional systems?

2 A. I'm saying the evidence would suggest that the rate of
3 incidents associated with freefall lifeboats is less than that
4 associated with conventional lifeboats.

5 Q. And both accidents and actual incidents of --

6 A. Correct.

7 Q. -- needing it --

8 A. Correct.

9 Q. -- launching. That the injury rate is less with freefall.

10 A. If I were to recall that last 10 incidents I've heard about
11 as it relates to lifeboats, I would say, if not all 10, 9 out of
12 10 of them would have been associated with conventional lifeboat
13 systems.

14 Q. Okay. Is there any movement in the IMO or any safety
15 organization to go towards freefall instead of conventional?

16 A. There has been moves within the industry for some time now --
17 some industries more than others -- to look at alternative
18 lifesaving arrangements. In the case of merchant ships that have
19 the requirement for 100 percent capacity, both sides, if they're
20 going to go with conventional systems, then it is not so much an
21 issue because of the numbers of occupants. But in the case of a
22 passenger ship that carry large numbers of occupants, their
23 ability to evacuate a ship is dependent on how quickly they can
24 load and embark the lifeboats.

25 Q. Okay.

1 A. And if you enter into a situation with freefall lifeboats,
2 with passengers that are not formally trained in seating
3 arrangements and so forth, you introduce new risks.

4 Q. Yes.

5 A. So, in the case of ferries that may operate on short voyages,
6 they may not need lifeboats at all. They can maybe just get away
7 with using their life rafts on the understanding that search and
8 rescue would be there in an appropriate time. So it all depends
9 on the ship type and operational profile that would dictate or
10 determine the type of lifesaving appliance that they use. The
11 industry has been looking at alternative design arrangements for
12 some time now and some of that information is in the public
13 domain.

14 Q. Uh-huh. Okay.

15 MR. KUCHARSKI: I do have a question for you. This is Mike
16 Kucharski, NTSB.

17 BY MR. KUCHARSKI:

18 Q. If you were abandoning ship in a hurricane, what would you
19 want to get into?

20 A. If I had to abandon a ship in a hurricane, I would actually
21 want to stay on the ship.

22 Q. If you didn't have a choice, what would you -- you had to get
23 off the ship. What would you, what would you choose to get into?

24 A. If I had to get off the ship, I would want to get into a boat
25 -- a lifeboat that would have been positioned low enough to the

1 water as part of the design that would minimize the effects of any
2 mechanical damage on descent.

3 Q. Lifeboat as opposed to life raft? You'd rather be in a
4 lifeboat?

5 A. I would rather be in a lifeboat as opposed to a life raft.

6 BY MR. FURUKAWA:

7 Q. And that was freefall or conventional?

8 A. And that would be a conventional lifeboat.

9 Q. Conventional lifeboat?

10 A. Being twin fall.

11 Q. Twin fall, rather than freefall?

12 A. Rather than freefall. And if you look the design changes
13 over the years, you've seen that many ships have positioned
14 lifeboats closer to the waterline. And that's been done for a
15 number of reasons. You reduce the weight from the wire falls.
16 You reduce the length of time it takes the vessel to actually get
17 to the water. Some have had challenges, because the lower they
18 get to the waterline the more likely they would be subjected to
19 possible significant wave heights or green seas. So it's a
20 balance that has to be struck.

21 Q. Okay. But you said earlier that the freefall lifeboat has
22 less incidents and accidents than the conventional --

23 A. Yes.

24 Q. -- lifeboats.

25 MR. KUCHARSKI: So why would you want to be in a conventional

1 than a freefall?

2 MR. DEVANEY: Well, because I've been on the launch of a
3 freefall and it is quite traumatizing, you know. In fact, even as
4 a surveyor -- and surveyors were specifically told by the
5 societies when you're out there witnessing the test of a freefall
6 lifeboat, if you request -- if you're requested to witness that
7 test or drill of the launching of a freefall lifeboat, which is
8 required annually, at a minimum, do not go into that lifeboat.
9 You may make it to the water -- the boat may make it into the
10 water safely, but the consequence of damage to the person's body,
11 you just don't know. It can be quite severe.

12 BY MR. FURUKAWA:

13 Q. Okay. In these annual tests, are they manned? So
14 somebody --

15 A. Yes. Crew. The crew would do it. And you had crew members
16 who are quite frightened to lower and launch the freefall
17 lifeboats.

18 Q. Okay. For your experience, how far was the freefall lifeboat
19 dropped from when you were an occupant?

20 A. Well, if I recall correctly, I think it would have been at
21 least maybe 30 feet.

22 Q. Thirty feet?

23 A. So that's about 10 meters.

24 Q. Ten meters?

25 A. Yeah.

1 Q. Okay. Was this a trainer or was this an actual --

2 A. It was part of the drill. It was in my younger days when I
3 felt as though, you know, there's some things in life you must do
4 once. I took the opportunity to go down in the lifeboat, slide
5 down the rails and feel the impact, and it's an experience that
6 you won't forget.

7 Q. Right. I did it in a trainer, in Germany. It was only about
8 7 meters, and yeah, that was an experience.

9 A. Yeah.

10 Q. So -- okay. Let's see. So I guess we'll kind of wrap it up
11 here. Tio, is there anything that you'd like to add or change?

12 A. No. I think, I think for the most part pictures paint a
13 thousand words. We know what the environmental conditions were.
14 In summary, I don't think that the open lifeboats, given the
15 environmental conditions they were in, would have been able to
16 sustain that environment at all. I think there's more than
17 sufficient data to support that.

18 I think that -- you know, not advocating for the sale of
19 totally enclosed lifeboats, but certainly advocating for
20 increasing lifeboat safety, moves should be put afoot to either
21 look at having the arrangements such that they would be
22 appropriate for the weather conditions that a ship may see,
23 knowing the risks of today. There are alternative arrangements
24 out there. And, you know, it's always difficult to suggest to
25 governments or member states collectively to make the change, but

1 I think individually member states can use their own legislation
2 to promote and improve and enhance the safety of lifeboats.

3 Q. Okay. Are there any questions that we should have asked you,
4 but did not?

5 A. Not that I can think of. I think we've had a good round of
6 discussions as it relates to the incident.

7 Q. Okay. Do you have any suggestions for preventing the
8 reoccurrence of an accident like this?

9 A. Yes. I think to prevent such an incident you have to look
10 at, you know -- the IMO, for example, looks at these things
11 holistically. So they don't just look at the incident. That's
12 the last thing down on the chain that would have happened. They
13 don't even look at the equipment and whether or not the equipment
14 was suitable and fit the purpose. They go back further.

15 They would look in -- look to see what was the vessel doing
16 in such an environment. The IMO has protocols for weather
17 routing, passage planning. All of these things need to be taken
18 into consideration. So it's not just one element. It's a sum of
19 quite a few. And I think with passage planning, most captains
20 would have taken all means to avoid the situation. And unless
21 there was -- I mean, if this was a situation where it was a squall
22 that just came out of nowhere, that would be completely different.
23 But this was a system that was being monitored for some time. I
24 almost lost a colleague in this particular incident because one of
25 our guys had just completed some work on the ship and was

1 disembarking when the ship was sailing away.

2 Q. Vil Farrow (ph.)?

3 A. Vil Farrow.

4 Q. Okay. Here's another one. Is there anyone else that you
5 think that we should interview?

6 A. From Harding Safety, not that I can think of.

7 MR. FURUKAWA: Okay. Okay. Thank you very much, Tio.

8 MR. DEVANEY: More than welcome.

9 MR. FURUKAWA: It is now 12:44 on the 13th of October, and
10 we're ending the interview with Mr. Tio --

11 UNIDENTIFIED SPEAKER: Devaney.

12 MR. DEVANEY: Devaney.

13 MR. FURUKAWA: -- Devaney. Going offline.

14 (Whereupon, at 12:44 p.m., the interview was concluded.)
15
16
17
18
19
20
21
22
23
24
25

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD


IN THE MATTER OF: SINKING OF THE *SS EL FARO*
 ON OCTOBER 1, 2015
 Interview of Tio Devaney

DOCKET NUMBER: DCA16MM001

PLACE: Washington, D.C.

DATE: October 13, 2016

was held according to the record, and that this is the original,
complete, true and accurate transcript which has been transcribed
to the best of my skill and ability.



Jane W. Gilliam
Transcriber